

# *The* CHEMIST

MARCH, 1938



VOLUME XV, NO. 3

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CHEMIST ADVISORY COUNCIL

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SCIENCE AND METAPHYSICS

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The American Institute of Chemists  
will be held at Atlantic City, N. J.

May 14, 1938



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# *The* CHEMIST

*Publication of*

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THE AMERICAN INSTITUTE OF CHEMISTS

HOWARD S. NEIMAN, *Secretary*

233 Broadway

New York, N. Y.

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## Chemist Advisory Council



*From top left to right:—Walter S. Landis, President; William T. Read, Vice-president; M. R. Bhagwat, Secretary; Robert T. Baldwin, Treasurer; Frank G. Breyer, Director; George C. Lewis, Director; Marston T. Bogert, Director; Maximilian Toch, Director; Edward R. Weidlein, Director; William W. Buffum, Director, and A. Cressy Morrison, Member of Finance Committee.*

## **Transfer of the Committee on Unemployment and Relief for Chemists and Chemical Engineers to Chemist Advisory Council, Inc.**

*By M. R. Bhagwat, F.A.I.C., Secretary*

The Chemist Advisory Council, Inc., was organized to take over the work of the Committee on Unemployment and Relief for Chemists and Chemical Engineers and to continue its broad objectives on a permanent basis.

In effecting the transfer of the Committee on Unemployment and Relief to the Chemist Advisory Council, Inc., a letter proposing such a transfer was forwarded to the officers of the sponsoring societies and honorary committees for their comments and approval. In response to this letter, several of the members of the honorary committees and officers of the sponsoring societies promptly responded giving their full assent. No opposition to the transfer was received.

Mr. Frank G. Breyer, F.A.I.C., Executive Chairman, of the Committee on Unemployment, by letter dated February 23, 1938, turned over to Dr. Walter S. Landis, President of the Chemist Advisory Council, Inc., the entire affairs of the committee on Unemployment and Relief, together with its assets, files, etc.

The members of THE AMERICAN INSTITUTE OF CHEMISTS are already acquainted with pertinent factual data regarding the work of the Unemployment Committee. The Secretary's report covering the period of this Committee from December 1931 to February, 1938, is as follows:

### **Secretary's Report Committee on Unemployment and Relief**

THE COMMITTEE ON UNEMPLOYMENT AND RELIEF FOR CHEMISTS AND CHEMICAL ENGINEERS (also known as Chemists' Unemployment Committee) was organized in the winter of 1931 for the purpose of helping unemployed chemists and chemical engineers residing within the greater New York metropolitan area.

After several meetings of the Volunteer Workers, a mass meeting was held on March 4th, 1932, which was attended by more than five hundred members of the chemical profession. Dr. George C. Lewis,

then President of The Chemists' Club presided; and Drs. Charles H. Herty, D. D. Jackson and E. R. Weidlein, together with officers of the Professional Engineers' Committee on Unemployment and the Gibson Committee, gave their views on problems confronting those unemployed and ways and means of helping professional groups.

### OBJECTIVES

In accordance with resolutions adopted at this meeting, the Committee began its work with the following objectives:

1—To maintain a registration file of unemployed chemists and chemical engineers, and to study their educational and experience records and personal problems.

2—To provide employment whenever possible and, in cases of distress, to give financial or other assistance required to maintain the morale of the registrant.

3—To secure assistance for needy registrants, either in the form of work or relief, from government and other welfare agencies established for emergency relief.

4—To bring to the attention of employed chemists and chemical engineers, technical societies and the chemical industry in general, the difficulties confronting those unemployed in the profession and secure their financial support to carry out the above objectives.

Office space at 300 Madison Avenue, New York, N. Y., and part of the office equipment was secured through the generosity of the Union Carbide and Carbon Corporation, and additional office equipment was obtained through the courtesy of the American Agricultural Chemical Company and the American Cyanamid Company.

An advisory committee consisting of the officers of the sponsoring societies and also honorary committees were consulted and the first letter of appeal for financial assistance was sent in April, 1932. New York metropolitan membership lists of the sponsors were used for this appeal. Initial funds for stationery, office supplies and expenses incurred in sending the first letter of appeal came from the following organizations and individuals: The Chemical Foundation, THE AMERICAN INSTITUTE OF CHEMISTS, North Jersey Section of the American Chemical Society, Association of Consulting Chemists and Chemical Engineers, American Institute of Chemical Engineers, Robert T. Baldwin, and L. H. Baekeland. Unemployed chemists and chemical engineers were selected for clerical and other work involved in this connection.



### REGISTRATION

With this as an initial start, the Committee has registered to date 2390 chemists and chemical engineers who resided within the greater metropolitan area at the time of registration. Of these, 774 have found employment in the industry and 855 have been placed on the inactive file due to unknown addresses or failure to respond to the Committee's correspondence. At the present time, 761 are on the active file seeking employment in the industry, of whom 176 are unsuitably employed. It should be noted, however, that the active file will have to be rechecked in order to determine the exact number now unemployed as no periodic canvass has been made for more than six months.

Except for a very minor percentage, every registrant received a college or university degree and majored in chemistry or chemical engineering. Non-graduates had more than four years of industrial experience and held responsible positions.

In addition to the above, applications have been received from about 500 chemists or chemical engineers residing in other parts of the country. To these may be added a large number of men and women whose education or experience was insufficient for them to register. However, they were given sufficient information regarding places where they might register and the nature of employment they might seek in chemical or non-chemical industries.

The Committee's entire qualified registration came from graduates or post-graduates of 282 educational institutions. Of these, 170 colleges or universities, together with 24 technical institutions, are located in practically every state in the Union. The remaining 88 educational institutions represent 27 foreign countries.

Women chemists registered with the Committee totalled 212. Of these, 71 have been permanently placed, 70 are on the inactive file and 71 are still seeking employment in the industry.

The records of 919 individuals show that they were either recent graduates or that they did not have any chemical experience since receiving their college degrees. Of these, 178 have been absorbed in permanent employment, 278 are on the inactive file, and 463 are still on the active file.

The average registration per month during the last six years varied from a maximum of 63 in 1932 to a minimum of 21 in 1937. The average placement per month during the same period varied from a maximum of 32 in 1935 to a minimum of 9 in 1937. No definite conclusions can be drawn from these figures as to the cause of these variations.

### WORK ACCOMPLISHED

Correspondence was carried on with 730 chemical companies in an effort to fill vacancies reported by suggesting suitable unemployed registrants. All services rendered in this connection were given free of charge to both the employed and unemployed chemist.

On behalf of unemployed chemists and chemical engineers whose financial resources were nearly exhausted and hence required immediate employment, the Committee approached government and other welfare agencies and an estimation of temporary employment secured through these sources would approximate a maximum of 400 during the Civil Works Administration and Civil Works Service days, and a minimum of 50 during the days of the Gibson Committee. To this may be added a number of placements of non-technical but useful employment varying from a day to several weeks.

Through the courtesy of three leading technical publications, free space was donated in "Positions Wanted" columns which enabled the Committee to bring to the attention of employers the records of 1223 unemployed chemists and chemical engineers. Replies received from these advertisements led to direct employment or leads which resulted in employment.

A total of 213 individuals and their families received financial assistance, either in the form of loans or "made-work" relief. Funds donated by members of the The Chemists' Club during Christmas holidays were used to provide food for the families of 124 registrants.

Through the coöperation of the Professional Engineers Committee on Unemployment, clothing facilities were made available for unemployed chemists and chemical engineers.

A Fundamental Research Program was sponsored by the Committee and a number of unemployed chemists in need were placed in the laboratories of universities to carry on research under the guidance of professors in these institutions. Persons working on these temporary projects were paid from the Committee's funds and the space and chemicals required were supplied by the university.

Through the courtesy of the International Exposition Co., the Committee was able to present its work to the chemical public during Mechanical and Chemical Expositions. This also enabled the Committee to bring the records of suitable candidates to the attention of employers reporting vacancies while attending the exposition.

During the Chemical Industries Tercentenary celebration, held under the auspices of the American Chemical Society in 1935, unemployed

chemists and chemical engineers were given temporary employment as clerks at information booths, registration de-ks, etc. These contacts proved valuable in several cases and lead to employment. The Committee's office, in turn, permitted the Tercentenary committee to use various facilities available at its office. The entire campaign to raise funds for this meeting, together with the compilation and publication of Mr. A. Cressy Morrison's book entitled, *Man in a Chemical World*, was completed at the Committee's office by using the clerical services of unemployed registrants. All expenses incurred in this connection were paid by the Tercentenary committee.

### FINANCIAL SUPPORT

Since the inception of the Committee to February, 1936 (when the last appeal was sent), seven letters of appeal were mailed to lists of chemists and chemical engineers consisting of members of the sponsoring societies and others approximating about 6,000. Contributions were received from 1071 individuals, 37 chemical companies, and 24 laboratory groups representing 224 persons. A total of \$52,358.57 were received in response to these appeals.

In addition to this, \$2625 was secured by the late George F. Hasslachner, ear-marked as "Castner Fund" to be used for the sole purpose of carrying on fundamental research by using the services of unemployed chemists in need.

The members of The Chemists' Club contributed a sum of money during Christmas and New Year holidays, designated as "CHEMISTS' CLUB FOOD FUND" and used for food and clothing exclusively.

A complete financial statement by Mr. Robert T. Baldwin, Treasurer, covering receipts and expenditures is attached herewith.

In expending the funds contributed, strict economy was observed, thus using every dollar available for assisting chemists and chemical engineers. Members of the staff of the Committee, including those rendering managerial service, were selected from unemployed registrants and they received nominal wages averaging five dollars per day. This resulted in large savings that might otherwise have gone to executive salaries. The Committee also saved about \$1,000 per year during its entire period of activity by securing office space, furniture, etc. without cost. Clerical and accounting services incidental to handling receipts and expenditures in relation to the Committee's work were

donated by the Treasurer, and stenographic services required for correspondence due to the office of the Chairman were supplied without cost to the Committee by the Chairman.

### CONCLUSION

From the foregoing, the chemical profession will be interested to learn that, due to the combined efforts of the sponsoring societies, voluntary assistance and guidance given by leaders in the chemical industry, and financial support received from 1332 individuals and companies, a successful attempt has been made to assist unemployed chemists and chemical engineers in their personal problems.

During the past six years of the Committee's work, moral, financial and other assistance has been given which, in many cases, proved to be the turning point in the lives of men and women who lost their positions due to causes beyond their control.

Being an emergency organization, the various phases of employment and welfare problems were dealt with on an emergency basis. A considerable amount of fundamental study and investigation is needed to place the chemical profession on a higher level and reduce the number of unemployed in it to a minimum. This enormous task requires a permanent, national organization supported by the entire profession. A survey of opinions of more than two hundred executives, educators and philanthropists in the chemical industry, located in the metropolitan area, favored these objectives.

At several of their council meetings, THE AMERICAN INSTITUTE OF CHEMISTS discussed problems involved in the continuation of the emergency committee. These discussions resulted in the organization of CHEMIST ADVISORY COUNCIL, INC. which will continue the broad objectives of the emergency unemployment committee on a permanent, national basis. It is hoped that the entire profession will give its unanimous support to the new organization.

In conclusion, the Committee wishes to extend its deep appreciation and thanks to all organizations and individuals whose timely assistance proved of considerable value in rendering emergency services to unemployed chemists and chemical engineers.

The Treasurer's Report of the Unemployment Committee is as follows:

## TREASURER'S REPORT

Committee on Unemployment and Relief  
for Chemists and Chemical Engineers

April 28, 1932 to February 24, 1938

## RECEIPTS

Castner Fund .....	\$ 2,625.00	
Chemists' Club Food Fund .....	979.00	
General Contributions .....	52,358.57	\$55,962.57
<hr/>		
Refunds for clerical and other services rendered on behalf of Chemical Industries Tercentenary, New York Section, A.C.S., and others by using the services of unemployed chemists .....	2,073.19	
Refunds from insurance, moratorium, rede- posited and misdated checks, etc. ....	95.58	
Refunds from loans given to unemployed chemists .....	75.00	2,243.77
<hr/>		
Special contributions received for travelling and food expenses for two unemployed chemists .....		130.00
		<hr/>
		\$58,336.34
		<hr/>

## EXPENDITURES

Distribution of food through Chemists' Club Food Fund .....	\$ 847.20	
Federal tax on checks .....	33.92	
Loans to unemployed chemists .....	2,784.59	
Office Expenses:		
Stationery, postage, etc., including station- ery and postage required for appeal letters .....	4,657.28	
Electric light .....	444.13	
Telephone, including additional services re- quired during Tercentenary celebration .....	1,038.64	
Expenditures on behalf of Chemist Advis- ory Council .....	54.58	6,194.63
<hr/>		

Publicity .....	18.15	
Returned checks re. moratorium, etc. ....	47.50	
Travelling expenses and transportation of families of unemployed chemists, including special fund of \$130. ....		447.73
Wages paid for made-work for clerical and all other services rendered by unemployed chemists .....	44,635.50	
Wages paid for made-work for fundamental research (Castner Fund) .....	2,415.00	47,050.50

(NOTE: All forms of made-work, including management and office services were paid on an average of \$5.00 per day)

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\$57,424.22

BANK BALANCE as of February 24th, 1938 ..... \$ 912.12

ROBERT T. BALDWIN, *Treasurer*

At a meeting of the Board of Directors of the Chemist Advisory Council, Inc., held on February 24, 1938, the proposal of the Committee on Unemployment and Relief for Chemists and Chemical Engineers was unanimously accepted and thus the Chemist Advisory Council, Inc., became the successor to the emergency committee.



### Notice

We have been advised that certain photographers in New York City are calling upon the members of THE AMERICAN INSTITUTE OF CHEMISTS and stating that they have been authorized to take photographs to be used by the INSTITUTE. We wish to advise members that all such statements are without foundation and that the INSTITUTE has made no such arrangements with any photographers.

### Chemist Available

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## Science and Metaphysics

By Jerome Alexander, F.A.I.C.

IN THE days before experimental philosophy became so highly differentiated that workers in specialized fields often failed to exercise that breadth of vision necessary to tell the woods from the trees, there existed a hardy, versatile race of curious investigators termed "natural philosophers". These men were untrammelled by pedagogic or professional limitations. They roamed at will through the length and breadth of the unexplored "philosophical" wilderness, blazing trails and discovering many of the areas and sites whereon now appear intellectual farms, villages, and cities. Consequently they had an appreciation of "the lay of the land" not generally acquired by their heirs, who now industriously till the fields and throng the towns which owe their existence to efforts of the pioneers.

To these pioneers nature was a unit. They were, perforce, physicists, chemists, mathematicians, biologists, and many of them saw nothing incongruous in entering the field of metaphysics, although this field was claimed as the special reserve of theologians. Independent thought in theological matters was "heresy" and was apt to cost one his life.

Following the long period of increasingly intensive and fruitful specialism wherein, for example, students of nuclear physics could hardly be aware of findings regarding the intestinal parasites of termites or the significance of laminated clay deposits (varves), the apparently widely scattered fields of science are being found to exhibit so many unsuspected interrelations, that a generalized knowledge of what is going on in apparently remote areas is essential for the specialist who would appreciate the full significance of work in his own field. Thus, in a book devoted to the naturally occurring chemical compounds related to phenanthrene, we find discussed their relation to the resins, the bile acids, the toad and heat poisons, the sex hormones, the cancer problem.

And now, under the challenging goad of H. G. Wells<sup>1</sup> we find a professor of mathematical physics taking up the gauntlet<sup>2</sup> on behalf of all scientists. Just why Wells should have picked on the professors of

<sup>1</sup> In his *Experiment in Autobiography* Wells wrote: "It is curious to find that today professors of physics . . . are still failing to be . . . lucid on such world-old problems as predestination and free will."

<sup>2</sup> "Physics and Metaphysics", by Dr. Paul E. Epstein, Professor of Mathematical Physics, California Institute of Technology, *Scientific Monthly*, July, 1937.

physics to the exclusion of their many scientific companions in iniquity, is hard to say. Perhaps he is most familiar with Jeans and Eddington.

In his incisive and scholarly paper, Professor Epstein defines predestination as "the doctrine that *all happenings in the universe were foreseen by God from eternity and take place, only, through His will.*" This leads to what Professor Epstein regards as an impasse: "If God is all-wise, He must have foreseen everything, and man can have no free will. But, in order to exercise His justice and grace by rewarding, forgiving or punishing. He must deal with creatures who are free and responsible. . . . The clearer minds among the churchmen of our time admit that the problem of reconciling<sup>2</sup> the fore-knowledge of God with the free will of man is insoluble, but they maintain that it need not be solved."

Philosophically, the equivalent of predestination is *determinism* as expounded by Spinoza, nature and mind being two aspects of divinity. Determinism is only one of the formulations of the scientific *principle of causality*, which was incorporated into religion as an article of faith, the doctrine of predestination. "This was a very unwise thing to do: An article of faith must be absolute and beyond human inquiry, while a principle of science is never final but always subject to refinement and revision. Of course, neither the metaphysicians nor the scientists realized that the principle of causality was not an absolute truth." Scientists, according to Professor Epstein, abandoned determinism because of the discovery, a few years ago, of "a very fundamental law of physics, the so-called *principle of indeterminism*, which states that the position and the velocity of a particle can not be accurately determined at the same time (and which also states the minimum limits of the experimental error)". From being a helpless tool of predestination, Professor Epstein sees man made by modern science an equally helpless plaything of chance.

Curiously enough, immediately following the article of Professor Epstein in *The Scientific Monthly* is another by E. C. Molina, entitled "A Tour Through Probability Domains", with a quotation from Bertrand Russell (*Atlantic Monthly*, August, 1930):

"If you put a kettle on a nice hot fire, will the water freeze?  
'Certainly not', says common sense, indignantly. 'Probably not',  
says physics, hesitatingly. According to physics, if every mem-  
ber of the human race put a kettle on the fire every day for

<sup>2</sup> Typical of the human response to this apparent impasse are the words of Omar Khayyam:  
"O Thou, who did'st with pitfall and with gin,  
Beset the road I was to wander in,  
Thou wilt not with predestined evil round  
Enmesh, and then impute my fall to sin."



the next million, million years (during which, according to Jeans, the world is to remain habitable), it is not unlikely that sooner or later the water in one of these kettles would freeze instead of boil."

But Russell failed to state that among the ever-changing concatenations of molecular agitation, the extremely rare situation, permissive of freezing would last *for so short an interval of time* that it would be unreasonable to believe that any freezing would take place at all, certainly no demonstrable freezing.

Similarly, a probability calculation would show that if we only wait long enough, a brick might float in the air because at a *certain instant* all or nearly all of the air molecules would make powerful kinetic impacts on the under side of the brick, thus giving it an upward lift approximating fifteen pounds per square inch, with practically zero pressure on the upper side of the brick. But this calculation should also indicate that the condition would be so fleeting that no one could notice it. It would be succeeded by other equally fleeting instants where atomic bombardment would actually add to the weight of the brick. On this matter, see article by Professor E. Kasner in *Scripta Mathematica*, January, 1938, entitled, "New Names in Mathematics."<sup>4</sup>

It will be observed that the principle of indeterminism as well as the deductions from the probability calculations are applicable to "the same time" or "a certain instant". However, an instant — mathematically, a *point* of time — has no more *practical* existence for us than a point of space. What we term "the present" is in reality the immediate past and the immediate future. The "present" has become the "past", before our sensory and intellectual apparatus, even when aided by clever mechanical devices, can inform us what was then occurring.

The particulate nature of all matter<sup>5</sup>, including our scientific apparatus, our sense organs, nerves and brain, as well as the electrical or other forms of energy whereby sense impressions are received, transmitted, and integrated into concepts, leads to the conclusion that neither human senses nor mentality can secure accurate premises whereon to base any logical conclusions to causality — "the principle of logic remains true that from given premises there always follows a unique

<sup>4</sup> Professor Kasner defines a *googol* as  $10$  to the hundredth power ( $10^{100}$ ), and a *googolplex* as  $10$  to a power represented by a *googol* ( $10$  to the *googol* power). This latter number is so great that we could go out to the farthest star and then make a tour of the nebulae, writing down zeros all the way in an attempt to express it. Professor Kasner thinks that a suspended book might move upwards towards the hand holding it within a *googolplex* of years, or within some other larger finite number of years. Owing to the matter of the inertia-time factor, I still remain a "doubting Thomas".

<sup>5</sup> A wave implies something waving, i.e., particulate units in motion.

conclusion, but it does not apply when there are no premises or not sufficiently accurate premises."

Professor Epstein concludes that though the new discoveries of physics are fatal to the concepts of determinism and predestination, the question of free will is not thereby decided affirmatively, but is simply severed to become an independent problem for separate investigation. However, when he says that "freedom of will implies man's ability of choosing *and* directing events", he confounds freedom of will with freedom of action. This is contrary to the old adage which states: "Man proposes, but God disposes".

Freedom of will is essentially the ability of a person to select, at a certain time and under certain conditions, a certain alternative of thought and/or action. The selection involves no infallible assumption or guarantee as to what the immediate or the remote consequences will be in every case, and absolute uniformity of results is seldom had or expected. The ethical and moral criteria of the situation are met, and free will is exercised, when a choice is made or, to throw a sop to the pure mechanists, who claim a material *force majeure*, when the chooser *thinks* he makes a choice.

The law has long recognized this situation. Criminal choice or intent (moral turpitude) must be proven in felonies. In order to obviate the difficulty of proving the putative state of mind of the law-breaker, laws often rehearse that certain acts are in themselves presumptive evidence of criminal intent. It must be stressed, however, that the laws existing at any particular time represent merely what is put into effect by the dominant powers of the state, that these laws will differ widely from time to time, and that owing to legal and legislative hysteresis, they often do not represent the current popular *mores*.

Thousands of years of human experience have established certain actions and inhibitions as desirable in human society. Thus the injunctions laid down in the Ten Commandments are generally accepted by civilized mankind. They seem to represent a condensation and extension of the Forty-two items of the so-called Negative Confession of the Egyptian "Book of the Dead". Six of these represent forms of stealing, which are condensed into the Eighth Commandment, *Thou shalt not steal*. It is to be noted that most of the Ten Commandments are also in the negative form. In any event, moral and ethical codes reflect states of human and social development, which

change from time to time and vary from group to group.<sup>6</sup>

In final analysis a human being can actually carry out only two types of activity—he can think, and he can change the position of some material things. The immediate or remote consequences of what he chooses (or thinks he chooses) to think or to do may not always be rigidly certain; but they are, as a rule, sufficiently certain to serve as guides for human and social behavior in the future as they have during the long past. Sciences of all kinds teach us to see more and more clearly what we may reasonably expect to be the consequences of our thoughts and choices of action. Both material and ethical progress lie along such lines.

Now it may very well be that a certain configuration of elementary physical units possessing the power of thought and action would, if *precisely* duplicated, and placed in *precisely* the same conditions, always respond at *precisely* the same time, with *precisely* the same thoughts or choices. But the same *laws* of probability earlier referred to, indicate how vanishingly small are the chances for the precise duplication, on this earth and at the same instant, of any complicated set of structural factors and milieu conditions.

Genetics teaches us, on the other hand, how powerful are the effects on thought and action of inherited physical structure. Identical twins, arising from the same fertilized ovum and therefore having the same genic inheritance, are surprisingly alike in structure, thought, and action. Their finger-print patterns and brain-electrograms are often difficult to distinguish. What differences they do show are probably attributable to differences in cytoplasmic inheritance; for though gene duplication appears to be precise, there is even in identical twins probably some difference in the apportionment of the cytoplasm of the zygote during the first and subsequent mitotic divisions. This generally would involve inequalities in the distribution of the "organizers" of Spemann.

The similarities of physical structure and behavior above referred to are evident to *other* individuals, i.e., to *outside observers*; but the thoughts controlling the actions of the individual himself constitute what we term his "conscience" and are directly known only to *himself*.

Acts of individuals which are in accord with current *mores* are regarded by others as ethical and moral. If consonant with existing law, they are legal. But thoughts, the secret springs of action, are the dominant factors in the scope of choice which we call free

<sup>6</sup> See, e.g., "The Dawn of Conscience" by Prof. J. H. Breasted.

will. No matter how a person may be limited by his inheritance and his education, so far as concerns his individuality, he is ethical and moral (even if not legal), when he acts according to the dictates of his own conscience, when he honestly follows his own "inner light".

Ethics and morality are not inherent in molecules, atoms, and subatomic particles, the ultimate material units of the physicist and the chemist. They are, rather, *emergent relations* which come into being only with the development of complicated material structures capable of thinking and choosing. These powers we believe to be most highly developed in man, but they are adumbrated in the lower animals.

It is interesting to note how the poet's eye in glancing "from earth to heaven, from heaven to earth", has envisaged these relationships between the physical and the metaphysical. Thus in his poem "Caliban, upon Setebos: or Natural History in the Island", Robert Browning pictures the reaction to natural phenomena of that low form of human mentality, "a freckled whelp, hag-born — not honour'd with a human shape":

"Thinketh, such shows no right nor wrong in Him,  
Nor kind, nor cruel: He is strong and Lord.  
'Am strong myself compared to yonder crabs  
That march now from the mountain to the sea;  
'Let twenty pass, and stone the twenty-first,  
Loving not, hating not, just chosing so.  
'Say the first straggler that boasts purple spots  
Shall join the file, one pincer twisted off;  
Say, this bruised fellow shall receive a worm,  
And two worms he whose nippers end in red;  
As it likes me each time, I do: so He."

The introspective mind of Rabbi Ben Ezra responds thus:  
"He fixed thee mid this dance,  
Of plastic circumstance,  
This Present, thou, forsooth, wouldst fain arrest:  
Machinery just meant  
To give thy soul its bent,  
Try thee and turn thee forth, sufficiently impressed."

In "Saul", Browning sees evidence of perfection everywhere in nature:

"Do I ask any faculty highest, to image success?  
I but open my eyes,—and perfection, no more and no  
less,  
In the kind I imagined, full-fronts me, and God is  
seen God.  
In the star, in the stone, in the flesh, in the soul,  
and the clod."

Resentment at the inability of humanity, despite choice, to control the inexorable powers of nature, blazes forth in Omar's quatrains again and again.

"And this inverted bowl we call the sky,  
Whereunder, crawling, cooped, we live and die—  
Lift not thy hands to it for help for it  
As impotently moves as thou and I.

"Ah, love! Could thou and I with Fate conspire  
To grasp this sorry scheme of things entire,  
Would not we shatter it to bits and then  
Remold it nearer to the heart's desire?"

And in William Henley's "Invictus" we find the defiant trumpet call of humanity to material limitations:

"It matters not how strait the gate,  
How charged with punishments the scroll—  
I am the master of my fate,  
I am the captain of my soul."

Not only are we limited in our efforts to make physical measurements and to understand the vast complexities of nature, but the very ultimates of both mind and matter continually elude us. As Herbert Spencer said, they are unthinkable.

Robert G. Ingersoll once wrote: "Our ignorance is God; what we know is science". But increasing knowledge simply brings us into closer contact with the lack of knowledge which Ingersoll termed "God"; for as we enlarge the frontiers of our knowledge, we correspondingly enlarge the frontiers of our ignorance.



## COUNCIL OFFICERS

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### CHAPTER REPRESENTATIVES

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LOUIS N. MARKWOOD

### *February Meeting*

The one-hundred and fiftieth meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on February 24, 1938.

President Maximilian Toch presided. The following officers and councilors were present: Messrs. F. G. Breyer, H. T. Clarke, B. H. Knight, H. G. Knight, R. J. Moore, H. S. Neiman, W. T. Read, M. Toch and F. W. Zerban. Mr. M. R. Bhagwat, Mr. G. E. Seil, and Miss V. F. Kimball were present.

The minutes of the previous meeting were accepted.

The Treasurer's report, covering the period from January 18, 1938, to February 22, 1938, and showing cash on hand of \$1505.11 with liabilities of \$233.65, was read and accepted.

The date and place of the Annual meeting were decided for Saturday, May 14, 1938, at Atlantic City, N. J.

The suggestions of the Jury on Medal Award were read and the Jury was instructed to report at the March meeting of the Council.

The date of the March Council meeting was decided for Thursday, March 24, 1938.

The Committee on Nominations for officers and councilors reported, and the Secretary was instructed to send out the nomination ballots as soon as possible.

The Secretary read a letter from Dr. F. A. Griffiths regarding the work of the INSTITUTE.

Edgar D. Bolinger was raised from Junior to Associate Membership.

Hugo Zahnd, F.A.I.C., was reinstated to membership.

The following new members were elected:

### FELLOWS

#### **Abson, Gene**

(1938). *Director*, Chicago Testing Laboratory, Inc., 536 Lake Shore Drive, Chicago, Ill.

**Anderson, Ernest**

(1938), *Head*, Department of Chemistry, University of Arizona, Tucson, Arizona.

**Beard, E. E.**

(1938), *Research Chemist*, E. I. duPont de Nemours and Company, Carrollville, Wisconsin.

**Bosee, Roland A.**

(1938), *Director of Laboratories*, Endo Products, Inc., 395 Fourth Avenue, New York, N. Y.

**Bratton, G. S.**

(1938), *Director of Laboratories*, Anheuser-Busch, Inc., St. Louis, Mo.

**Brown, Cecil L.**

(1938), *Research Chemist*, Standard Oil Company of Louisiana, Baton Rouge, La.

**Byck, Harold T.**

(1938), *Research Chemist*, Shell Development Company, Emeryville, California.

**Byers, Marshall S.**

(1938), *General Supervisor*, Hercules Powder Company, Brunswick, Ga.

**Cade, Arthur R.**

(1938), *Consulting Chemist and Bacteriologist*, 4621 Beard Avenue South, Minneapolis, Minn.

**Case, F. O.**

(1938), *Manager of Midwest District*, International Smelting and Refining Company, Chicago, Ill.

**Chernoff, Lewis H.**

(1938), *Chemist*, U. S. Food and Drug Administration, 531 U. S. Customs Building, Denver, Colorado.

**Clark, Arthur J.**

(1938), *Head of Department*, Kedzie Chemical Laboratory, Michigan State College, East Lansing, Mich.

**Cleveland, T. K.**

(1938), *Chief Chemist*, California Branch, Philadelphia Quartz Company, Berkeley, Calif.

**Cohn, David J.**

(1938), *Director of Laboratories*, Michael Reese Hospital, Chicago, Ill.

**Coleman, George H.**

(1938), *Professor*, Department of Chemistry, University of Iowa, Iowa City, Iowa.

**Coolbaugh, M. F.**

(1938), *President*, Colorado School of Mines, Golden, Colo.

**Crabill, Allen Kirk**

(1938), *Chemist*, E. J. Lavino and Company, Lynchburg, Virginia.

**Craig, William M.**

(1938), *Professor of Chemistry*, Texas Technological College, Lubbock, Texas.

**Dean, Paul M.**

(1938), *Professor of Organic Chemistry*, University of Colorado, Boulder, Colorado.

**DeWitt, C. C.**

(1938), *Associate Professor*, Michigan College of Mining and Technology, Houghton, Mich.

**Fleischer, Joseph**

(1938), *Chemist*, Western Cartridge Company, East Alton, Illinois.

**Floyd, W. W.**

(1938), *Head Department of Physics and Chemistry*, Sam Houston State Teachers' College, Huntsville, Texas.

**Godbey, J. C.**

(1938), *Head Department of Chemistry*, Southwestern University, Georgetown, Texas.

**Grunewald, Max E.**

(1938), *Secretary, Treasurer, and Chemical Engineer*, Coplay Cement Manufacturing Company, Coplay, Pennsylvania.

**Heck, Frank G.**

(1938), *Research Engineer*, E. J. Lavino and Company, Norristown, Pennsylvania.

**Heiligman, Harold A.**

(1938), *Assistant Technical Director*, E. J. Lavino and Company, Norristown, Penna.

**Higley, L. Allen**

(1938), *Department Chairman*, Department of Chemistry and Geology, Wheaton College, Wheaton, Ill.

**Huston, Ralph C.**

(1938), *Dean of Applied Science*, Michigan State College, East Lansing, Michigan.

**Jones, S. Guy**

(1938), *Professor of Chemistry*, University of Redlands, Redlands, Calif.

**Juilly, Marcel E.**

(1938), *Analytical and Consulting Chemist*, 200 Bush Street, San Francisco, Calif.

**Kesler, C. C.**

(1938), *Director of Research*, Penick and Ford, Ltd., Cedar Rapids, Iowa.

**Koch, G. P.**

(1938), *Shell Union Oil Company*, 50 West 50th Street, New York, New York.

**Lawrie, James W.**

(1938), *Director of Research*, Schlitz Brewing Company, Milwaukee, Wis.

**Lewis, Henry R.**

(1938), *Chemist*, Allegheny Chemical Corporation, Womelsdorf, Penna.

**Meiter, E. G.**

(1938), *Director Industrial Hygiene Laboratory*, Employers Mutuals Insurance Company, Milwaukee, Wis.

**Meredith, Howard J.**

(1938), *Chief Chemist*, Koppers Company, Seaboard Division, Kearny, New Jersey.

**Merrill, David R.**

(1938), *Manager of Research*, Union Oil Company of California, Wilmington, Calif.

**Moore, Neil P.**

(1938), *On Research Staff*, College of Agriculture, University of California, Davis, Calif.

**Moran, W. H.**

(1938), *Professor*, Department of Chemistry, University of North Dakota, Grand Forks, N. D.

**Neuman, E. W.**

(1938), *Professor of Chemistry*, Carroll College, Helena, Mont.

**O'Connor, Charles T.**

(1938), *Chief Chemist*, Oil Soluble Resin Division, General Plastics, Inc., N. Tonawanda, N. Y.

**Palmer, R. C.**

(1938), *Research Chemist*, Newport Industries, Inc., Pensacola, Florida.

**Perry, Margaret C.**

(1938), *Chemist*, Columbia Hospital, Milwaukee, Wisconsin.

**Ray, T. W.**

(1938), *Assistant Professor*, Department of Biochemistry, Marquette University School of Medicine, Milwaukee, Wis.

**Rich, R. C.**

(1938), *Chief Chemist*, Shell Petroleum Company, Houston, Texas.

**Rising, L. W.**

(1938), *Professor of Pharmacy*, University of Washington, Seattle, Wash.

**Schneider, Julius L.**

(1938), *Chemical Engineer*, Continental Can Company, Chicago, Ill.

**Smith, F. B.**

(1938) *Soil Microbiologist*, College of Agriculture, University of Florida, Gainesville, Florida.

**Sweeney, W. J.**

(1938), *Associate Director*, Esso Laboratories, Elizabeth, N. J.

**Thompson, C. T.**

(1938), *President*, Thompson-Hayward Chemical Company, Kansas City, Missouri.



**Voorhees, Vanderveer**

(1938), *Research Chemist*, Standard Oil Company of Indiana, P. O. Box 5910-A, Chicago, Ill.

**Weiser, Harry B.**

(1938), *Head Department of Chemistry*, The Rice Institute, Houston, Texas.

**Wilson, Roy R.**

(1938) *Research Chemist*, Standard Oil Company, Rocky Mountain Division, Casper, Wyoming.

**Winter, Harry C.**

(1938), *Research Chemist*, Biochemical Research Foundation of the Franklin Institute, Philadelphia, Pennsylvania.

ASSOCIATE

**Dixon, John G., Jr.**

(1938), *Laboratory Assistant, Chemist*, Anaconda Wire and Cable Company, Marion, Indiana.

JUNIORS

**Condon, Herbert T.**

(J.1938), *Analyst*, Aluminum Re-

search Laboratories, East St. Louis, Illinois.

**Gibbons, John P.**

(J.1938), *Chemist*, E. J. Lavino and Company, Plymouth Meeting, Penna.

**Levinos, Steven**

(J.1938), *Chemist*, Smith Chemical Works, Edgewater, N. J.

**McNerney, Clay F.**

(J.1938), *Chemist*, E. J. Lavino and Company, Philadelphia, Penna.

**Weinstein, Reuben**

(J.1938), *Paint and Varnish Chemist*, Globe Paint Company, Inc., Brooklyn, New York.

The Chemist Advisory Council reported progress.

Upon motion made and seconded, each Chapter was invited to form a committee of three to five members to coöperate with the Chemist Advisory Council.

There being no further business, adjournment was taken.

## CHAPTERS

### New York

*Chairman*, William T. Read

*Vice-chairman*, D. D. Berolzheimer

*Secretary-treasurer*, James W. H. Randall  
52 East 41st Street  
New York, N. Y.

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*News Reporter to THE CHEMIST*, W. A. Smith  
*Council Representative*, Arthur W. Burwell

## Pennsylvania

Chairman, Gilbert E. Seil

Vice-chairman, Walter L. Obold

Secretary-treasurer, Maurice L. Moore

Sharpe and Dohme, Inc.

P. O. Box 1404

Philadelphia, Penna.

Council Representative, Joseph W. E. Harrison

A meeting of the Pennsylvania Chapter was held on February twenty-second at the Engineers Club, Philadelphia. Following a brief business meeting, Dr. W. F. Faragher, Director of Research, of the Catalytic Development Company, spoke on the subject, "Does Research Pace our Industry, The Picture in Oil". This proved to be one of the most interesting papers presented before our chapter and it is being revised for submission to THE CHEMIST for publication in a later issue. Dr. Faragher presented a stimulating picture of the status of research in industry, especially as found in the petroleum industry, which provoked a vigorous round table discussion led by Dr. Seil, Technical Director of the E. J. Lavino Co., Mr. Eugene F. Cayo, Secretary of Samuel P. Sadtler & Sons, Professor George R. Bancroft,

Jefferson Medical College, Mr. Franklin D. Jones and others.

The January meeting of the chapter was held at the Engineers Club on January twenty-fifth, with twenty-four members and guests present. The subject of the evening's discussion was, "Some New Uses of Silicates". Dr. William Stericker, Development Chemist for the Philadelphia Quartz Company, illustrated, with motion pictures, some of the recently developed uses of the silicates in industry. It was brought out that silicates were finding much use in small amounts in water systems to prevent excess corrosion of the pipes, as waterproofing agents for houses, and other structures, as well as adhesives in textiles, paper boxes, and other manufacturing enterprises.

## Washington

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President, Louis N. Markwood

Vice-President, Norris W. Matthews

Treasurer, James B. Martin

Secretary, A. P. Bradshaw

2121 New York Avenue, Washington, D. C.

News Reporter to THE CHEMIST, James F. Couch

Council Representative, Louis N. Markwood

The first meeting of the current year took the form of a luncheon held October twenty-second at the Department of Agriculture. The guest speaker was Mr. C. D. Willard of the Columbia Broadcasting System who traced the technical development of radio telephony and spoke at some length on the

evolution of broadcasting, character of programs, and policies of broadcasting companies. The twenty-eight members and guests present thoroughly enjoyed the occasion.

At the regular October meeting, held on the twenty-eighth at the Wardman Park Hotel, Mr. N. W. Chien of the

Chinese Embassy staff spoke on general conditions in China, a live topic that held the interest of the members throughout.

On November tenth another luncheon was held at the Department of Agriculture. Mr. Shirley Povich, sports writer of the *Washington Post*, was the speaker and took the group behind the scenes in American sporting circles in a witty and enlightening manner. As the month was November, football was in the limelight and occupied much of the attention, but horseracing, an activity of some local popularity, came in for a good share of the discussion with certain references to financial considerations of a polymerization type.

Mr. A. E. Kimberly of the Federal Archives addressed the December luncheon held in the same place on the eighth. Mr. Kimberly described the type of documents stored in the Archives building, the equipment used to preserve them from destructive agencies, how the old papers are cleaned, coated with plastic material, and filed for ready reference. A card index system catalogues all documents so that they may be found as readily as a book in a public library. Of special note was the section devoted to the filing of motion picture films. The talk was illustrated with enlarged photographs of the equipment and processes. Twenty-eight members and guests were present. This was a capacity crowd and only those who applied early were able to obtain places.

The second regular meeting of the Chapter was held December twelfth, at the Wardman Park Hotel. The chief address of the evening was made by Mr. Frank G. Breyer, F.A.I.C., who

spoke on "Organization of the Chemical Profession". Those of us who heard Mr. Breyer were stimulated by his dynamic presentation of this subject. He brought out first, that in order to have a profession we must have members. Such an organization must raise the social and economic status of the chemist and chemical engineer. The organization of the law and medical professions was cited as an example. The effect of organization on the independent or consultant chemist or chemical engineer and on the "Patent Institution" was stressed. Mr. Breyer illustrated his talk with many examples taken from his own personal experiences which were found most convincing for this type of organization. Mr. Breyer's talk was preceded by a short presentation of some of the problems which face the chemists here in Washington, particularly those who are in the Government service; what organization has done for them and what he hopes can be done in the future. A lively discussion by the members present followed the speeches.

On January twenty-sixth, the fourth luncheon of the year was held at the Department of Agriculture. Thomas R. Henry, feature writer of *The Star* whose science reports are well known to Washington readers, was the guest speaker. He gave a most interesting talk on the use and development of languages. He said that chemistry now has a simple or "vulgar" language, i.e. one word stands for one definite thing, but as it becomes more and more refined one word will begin to stand for many different things and then the language will no longer be vulgar.

The International Congress for Soil Chemistry will be held in Helsingfors, Finland, in August, 1938.

Carbide and Carbon Chemicals Corporation will erect a new plant in Texas City, Texas.

## NORTHERN LIGHTS

By Howard W. Post, F.A.I.C.

Certain steps are planned by the Canadian Institute of Chemistry to bring the organization in line with the Department of National Defense. The details will be found on page 15 of the January 1938 number of *Canadian Chemistry and Process Industries*.



"The tumult and the shouting cease," then comes the time for inventory. That may not be anything like a literal quotation from Kipling's famous poem but we doubt not that sentiment such as this lay back of an editorial we recently saw in *Canadian Chemistry and Metallurgy* 21 397 (1937). The writer of this editorial seemed to feel that we are in the midst of an era of "neoteric ideas and plans." He mentioned three men who, in his opinion, are influencing world affairs today to a maximum, "the psychologist, the propagandist, and the chemist." There is much in that statement on which we might elaborate. In the first place the work of the first and especially that of the second is open to us and quite apparent. It receives the advertising of the Sunday press and immediately thereafter the classification which it probably deserves. Secondly, with us as chemists, it is as though we worked behind screens. In a lasting way our influence is exerted from year to year in a slow building up of this civilization of ours along the lines of material comforts, a higher plane of public health, etc. Perhaps it is just as well that our deeds are not heralded from irresponsible house-tops.

But to return to the editorial, we

liked the next theme as well—"More chemists found jobs during the past twelve months than in any year for a decade." Congratulations and let the good work go on!



In the same issue will be found, on page 409 a most timely article on "The Outlook for Research. The Need for Application and Co-ordination in Canada," by Dr. R. K. Stratford, Vice-President of the Canadian Chemistry Association. We quote "... during the past fifteen years, on this Continent, production volume of petroleum products has increased three times; the cost of chemicals used in process operations has been cut almost one-third; the capital investment in processing units remains about where it was." But the writer goes on to state that the economic condition of the consumer has not kept pace. He makes the suggestion that twenty-five percent of the time of the research man be devoted in the future to research as such, twenty-five percent to the selling of ideas, the consulting with and education of his associates and fifty percent to the application of his results by the consumer. A point is made that in non-totalitarian countries the mechanism for this close coöperation between industry and consumer must be developed; there exists no force from above to compel any such coöperation.

When the time came to suggest a general solution to these matters, Dr. Stratford placed his faith in "public education and proper expansion of the thought that scientific coöperation was an important factor in national solvency." More concretely, he suggested

closer coöperation between government and industrial chemists.



American sugar chemists may be interested in some of the difficulties and conditions besetting kindred spirits farther north. We find in the *C-I-L*, *Oval* a recent article on the sugar industry which describes the service the Canada and Dominion Sugar Company maintains for the purpose of aiding growers to obtain greater yields from their beet fields. This includes

research along the lines of the best fertilizer mixtures, soil testing, germination studies, etc. The frosts in Ontario are killing and it is thus the custom to "lift" the beets and store them in pits during the winter, replacing them in the spring. However, work is now in process, under the auspices of Canadian Industries, Ltd., looking toward the development of a technique and a strain of beet that will enable the "steckling" or smaller beet grown by planting late in the season to be left in the ground all winter.

## CHEMISTS

The announcement has been made from London that Dr. Leo H. Baekeland, Honorary Member of THE AMERICAN INSTITUTE OF CHEMISTS, has been elected to receive the Messel Medal for 1938. This medal is awarded by the Society of Chemical Industry every two years for outstanding achievement in science.

The medal was founded in 1922 in honor of Rudolph Messel, benefactor, one of the original members and twice President of the Society of Chemical Industry.

The medal will be presented to Dr. Baekeland at the Annual Meeting of the Society of Chemical Industry in Ottawa, Canada on June 20, 1938.



Dr. Henry G. Knight, F.A.I.C., Chief of the Bureau of Chemistry and Soils, recently reported to Secretary Wallace that one of the objects of research of that Bureau was to find new and wider industrial uses for farm products, by-products, and surpluses.

Work toward this objective included the development of methods of producing starch from sweet potatoes; a process for making better sorgo and sugarcane sirups; the use of waste hemlock bark as a source of tannin; a study of the effect of animal-feeding on leather; chemical weed killers; the determination of amino acids in whole foods; the preparation of dried egg whites; experiments with allergens causing hay fever; fertilizers; soil surveys; and other research activities.



A meeting of the American Section of the Society of Chemical Industry, jointly with the American Chemical Society, was held February twelfth at The Chemists' Club, 52 East 41st Street, New York, N. Y. Mr. James G. Vail, F.A.I.C., was the chairman. The guest speaker was Mr. William M. Phillips who gave a "Graphic Presentation of Electroplating Operations."



Arthur F. Helin, J.A.I.C., is now with The Eastman Kodak Company, Rochester, N. Y.

The safety record of the du Pont Company compiled during the year 1937, was the best in its long history, the company announced recently.

With employment 11 per cent over the previous year, du Pont plants experienced a "frequency rate" of 1.85 as against 2.02 in 1936, the most impressive safety year up to that time. The "severity rate" in 1937 was .76, well below the 1936 average of .86. Frequency rates measure the number of injuries for each 1,000,000 exposure hours. The severity rate is the number of days lost per 1,000 exposure hours.

During the year, one plant achieved a record when it completed two full years without a major injury, during which time 4,109 men and women, worked 11,362,000 exposure hours. Forty-seven du Pont plants, laboratories, and construction projects worked through the entire year without a single injury serious enough to cause an employee to lose time from work.

Safety education within the company has formed an important part of the managerial program, and has been intensified within recent years as the wide development of new products multiplied safety problems. This effort has produced a constant lessening of injuries, the part year's frequency rate ratio of 1.85 being contrasted to 12.80 in 1925, considered a good record at that time.



The Perkin Medal for 1938 was presented on January seventh to Dr. Frank J. Tone, President of The Carborundum Company, at a joint meeting of the American Section of the Society of Chemical Industry and the American Chemical Society, held at The Chemists' Club, New York City. James G. Vail, F.A.I.C., Chairman, presided

over the meeting. After a talk on the life and accomplishments of the medalist by Dr. Carl G. Schluederberg, the medal was presented to Dr. Tone by Professor Marston T. Bogert, F.A.I.C. After the presentation Dr. Tone gave his medal address entitled "The Quest for Hard Materials".



### First Chemical Congress in Peru

The First Peruvian Chemical Congress will be held in Lima July 18-23, 1938. The idea of such a congress, the first of its kind ever to be held in Peru, was initiated by the University of Trujillo. Originally it was planned to hold the congress in Trujillo, but the place was subsequently changed to Lima, the Capital City of the Republic. The organizing committee is composed of delegates from the Universities of Trujillo, Cuzco, Arequipa and San Marcos, the National Engineering and National Chemical Societies and government departments.

The underlying purposes of the congress are to increase and strengthen the bonds and cooperation between professional and student chemists and to encourage study and research in chemistry with the idea of developing a chemical industry in Peru.

The following is a tentative list of proposals to be submitted to discussion:

1. To review the chemical history of Peru;
2. To have chemistry a compulsory subject of study in all grade schools;
3. To acquaint the pharmaceutical profession and chemists with the industrial fields in chemistry in the country, which have not been established by national efforts;
4. To consider legislation that would be of assistance to the development of chemical research;

5. To study analytical methods;
6. To combine the schools of pharmacy and chemistry so that the pupils would have the best equipment at their disposal;
7. To study the actual industries existing in Peru with the possibility of creating new industries and to take advantage of the raw materials to be found in Peru which so far have not had adequate exploitation;
8. To standardize chemical, clinical and biological methods;
9. To study and revise pure food and drug regulations.

Products to be discussed in special groups are: Metals, coal, petroleum, construction materials, cement, bricks, plaster, glass, pottery, paint, dyes, fats, soap, textiles, natural and artificial bleaching materials, pyroxylin plastics, inks, pharmaceutical products, food products, sugar, fermented beverages, mineral waters, insecticides and fungicides, fertilizers, soil, forage, agricultural products in general, explosives, gases, smoke and toxic powders, national defense products (gas masks and shelter problems) and medicinal properties in plants.

Prizes will be awarded in recognition of important studies made in each of these specialties.



Mr. James T. Grady, School of Journalism, Columbia University, has been appointed a member of the Publicity Committee of Chemist Advisory Council, Inc.



Dr. Gerald Wendt, F.A.I.C., is giving a series of ten weekly lectures on "Science in the World of Today", at Town Hall, New York, N. Y., beginning March 9, 1938.

Wheeler McMillen, president of National Farm Chemurgic Council and editorial director of *The Country Home*, has been elected a director and vice-president of The Chemical Foundation, Inc., it was announced recently.

Mr. McMillen succeeds the late Francis P. Garvan as a director of The Chemical Foundation. In assuming the vice-presidency, Mr. McMillen becomes the ranking officer of the Foundation since no immediate successor is proposed for the office of president which was held by Mr. Garvan, who, during the eighteen years he directed the Foundation, played a major role in the development of the American Chemical Industry and the Chemurgic movement.

The Chemical Foundation will continue its support of research development in the chemical, scientific and medical fields, according to William W. Buffum, (Hon. A.I.C.) treasurer and general manager. Particular emphasis will be placed upon activities tending toward establishment of new chemurgic industries through the use of farm products as industrial raw materials.



Dr. Alexander Silverman, F.A.I.C., Head of the Department of Chemistry in the University of Pittsburgh, delivered a series of lectures on glass during the week of January seventeenth. On January seventeenth he lectured at the State University of Iowa in Iowa City on "A Survey of Glass Technology." The same lecture was repeated January nineteenth at Iowa State College in Ames, Iowa. On January twenty-first he lectured on "New Developments in Glass Manufacture" at a joint meeting of the American Chemical Society and the American Ceramic Society in Chicago.



Dr. A. Richard Bliss, Jr., F.A.I.C., of Birmingham, Alabama, was elected Chairman of the Alabama Section of the American Chemical Society, and assumed the duties of the office on January first.



The Annual Meeting of all sections of the Society of Chemical Industry will be held in Ottawa, Canada, June 20-22, 1938. A full program of events extending over the period June 17 to July 1 has been arranged for the visitors from abroad. (See *The Chemist*, February 1938, page 135.) The American Section of the Society of Chemical Industry will entertain the members of the parent Society at Niagara Falls, New York on June 25, 26 and 27. The Committee on Arrangements for the Niagara Falls Visit is as follows: Frank J. Tone, Chairman; James G. Vail, F.A.I.C., (Chairman, American Section); Wallace P. Cohoe (Vice Chairman, American Section); C. S. Kimball (Hon. Secretary, American Section); J. W. H. Randall, F.A.I.C. (Hon. Treasurer, American Section); Paul S. Brallier, H. R. Carveth, George Cox, Waldo C. Hovey, William B. Leach, James G. Marshall, R. Lindley Murray, R. R. Ridgway, E. A. Rykenboer, H. Walton Scott, Walter Wallace, Howard P. Wells.

Foster D. Snell, F.A.I.C., addressed Baltimore Section of the American Chemical Society on January twenty-fifth on the subject "Some Factors in Detergency". In his talk Dr. Snell outlined the four known factors and presented evidence to indicate that only those factors control the efficiency of a detergent. This was then applied to many types to illustrate variation in the relative importance of different factors in the cases of toilet soaps, laundry detergents, scrub soaps, wetting out agents, sulfated alcohols, etc.



After many years of service at the City College and Brooklyn College, New York, where he was Chairman of the Department of Chemistry, Professor Frederick E. Breithut, F.A.I.C., retired from office on January 3, 1938. Professor Martin Meyers, F.A.I.C., has been appointed acting chairman of the department.

The following staff promotions in Brooklyn College, New York, have recently been announced:

Drs. Ernest M. Livingston, F.A.I.C., David Davidson, and Dwight K. Alpern to the rank of assistant professor; Mr. Stephen P. Marion to the rank of instructor; Mr. David M. Sharefkin, J.A.I.C., to the rank of tutor.

## BOOKS

MODERN RUBBER CHEMISTRY. By Harry Barron.

As an introduction to the chemistry of rubber, this book has the merits of small size (330 pages), large clear type, and fair documentation. In places, compression of text has been carried to the point where incoherence

begins to set in. There are also evidences of carelessness such as the statement on page 322 that "lead may be estimated by converting the sulphate to oxide by heating for ten minutes in a muffle furnace."

On the other hand, the book has in its favor the inclusion of something



about the chemistry of rubber from practically every aspect, even to modern references to synthetic rubber and deproteinized natural rubber, as well as a chapter on the direct use of latex. There is one significant omission, however; namely, the subject of rubber cements.

On the whole, the book must be considered as an introduction rather than, in any more serious sense, a compendium of the present knowledge of rubber.

—KARL M. HERSTEIN, F.A.I.C.



THE CARBON COMPOUNDS. By C. W. Porter, Professor of Chemistry, University of California. 495 pp. \* \$4.00.

The third edition of this well known book, constituting an outline of an elementary course in organic chemistry, has just been published, and while its scope is limited to the fundamental principles and general reactions, the former editions have been thoroughly revised, and hence, this present edition is in step with recent advances in the field of chemistry. It is much more than simply a dictionary of the carbon compounds in that it contains informative and descriptive matter relative to each of the groups of carbon compounds, including their principal chemical and physical reactions.

While the publication was intended primarily as an elementary course in chemistry, those who are familiar with the deeper intricacies of chemistry will find in it much of interest and value. It is therefore suggested that a copy of the book should be upon the library shelves of every chemist whether he be a novice or one of more extended knowledge and experience.

#### INDUSTRIAL CHEMICAL CALCULATIONS.

By Olaf A. Hougen and K. M. Watson. 2nd Edition, 487 pp. 97 figures 6" x 8". \$4.50.

In this second edition of this valuable work, Professor Hougen and Mr. Watson have again covered very thoroughly the important principles of physical chemistry which are applicable to industrial uses.

The thermodynamic approach to the problems of the chemical engineer in industry, which has been adopted in the second edition, replacing the kinetic theory method employed in the first edition, should be of particular value to the chemical engineer in his daily work.

The segregation of ideal from non-ideal cases and development of the theory of calculations through the first to the second type marks the second edition as a distinct advance over the first, in which the two types of cases were discussed concurrently.

We find the chapter on the calculations of crystallization, with its enthalpy-concentration charts, particularly interesting.

In summary, we believe this work will prove a valuable addition to the library of the active chemical engineer.

—A. P. L.



GERMAN FOR CHEMISTS. By John H. Yoe, F.A.I.C., and Alfred Burger. 537 pages. \$4.50.

This excellent German text is designed to introduce technical German in a simple and direct method to chemists and chemical engineers. In the first chapter the student is acquainted with German phrases and chemical terms by a series of exercises, the German being on one side of the page

with the translation on the opposite side. The sentences in these exercises are relatively short, are descriptive, and have a continuity that make them into interesting paragraphs. The remaining eight chapters, each of which is represented in the above exercises, take the student through the following divisions of chemistry: inorganic, organic, analytical, physical, colloidal, industrial, and physiological, together with a chapter of excerpts from German chemical books and periodicals. There is no translation in this section of the book. In each of these divisions the authors have brilliantly covered the field, have introduced the important reactions and formulæ, and have used repetition of the important terms and names so skillfully that it is not noticeable. If more than one word exists for a compound or chemical term, they have familiarized the student with both. The last chapter is a welcome stepping-stone from text-book translation to what one may expect to meet in the actual translation of German chemical literature. There is no vocabulary in the book, but the authors recommend several of the better technical German-English dictionaries, a much better arrangement since a satisfactory vocabulary would increase the size of the book too much. Although this book is highly recommended for classroom work, chemists wishing to become better acquainted with technical German will find it a most helpful aid.

—C. F.



#### VITAMINS AND DEFICIENCY DISEASES.

By Bernard L. Oser, F.A.I.C., Director, Food Research Laboratories, New York, N. Y. (87 pages).

This publication is a reprint of

Chapter XXX of Practical Physiological Chemistry, Eleventh Edition, Copyright, 1937, by Hawk and Bergeim, and is a complete résumé by the author of the research activities of Hopkins, Eijkman, and Funk, and an army of eminent scientists throughout the world who have followed these leaders into a scientific examination of the relationship between vitamins and deficiency diseases.

The publication contains not only a description of the relationship between the various vitamins and the diseases indicated, but is embellished with numerous photographs and charts which undoubtedly make it the most complete résumé upon the subject.



CATALYSIS. By Schwab, Taylor, and Spence. \$4.25.

Our knowledge of catalysis has long passed the stage where it was merely possible to cite and classify instances of its occurrence. This volume is a purely theoretical discussion of the phenomenon from the standpoint of chemical kinetics.

After two chapters, which are concerned respectively with a historical and a general introduction, there follow chapters on Catalysis of Gas Reactions, Catalysis in Solution, Negative Catalysis in Solution, and Heterogeneous Catalysis.

Altogether there are nineteen chapters, in which will be found a statement of our theoretical knowledge of catalysis as up-to-date and a thorough mathematical treatment of the theory. In this respect, the volume will be of no apparent use to anyone consulting it for purely practical assistance; yet, as a statement of what may be expected from the use of catalysis, the volume is indispensable.

—KARL M. HERSTEIN, F.A.I.C.



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